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The Effect of Using Canva-Based Media Usage on Geography Learning Outcomes of Class X Students at UNPATTI Laboratory High School

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ABSTRACT

This study aims to determine the effect of using Canva digital media on the geography learning outcomes of tenth-grade students on the lithosphere material at UNPATTI Laboratory High School. This research employs an experimental method with a control group and an experimental group design. The research sample consists of 28 students divided into two groups: the control group, which used conventional learning methods, and the experimental group, which used Canva. The results of the independent t-test shown in the table indicate a significant difference between the learning outcomes of the control group and the experimental group. The Levene's Test showed an F value of 0.804 with a significance value (Sig.) of 0.378, indicating that the assumption of equal variances is acceptable. In the t-test for mean comparison, the obtained t value was -2.651 with degrees of freedom (df) of 26 for the assumption of equal variances, and 25.547 for the assumption of unequal variances. The two-sided significance value, which was less than 0.05 (0.013 and 0.014 respectively), indicates a significant difference between the two groups. The mean difference between the two groups was -5.857, showing that the learning outcomes of the control group were significantly lower than those of the experimental group. The results of the independent t-test showed a significant difference between the learning outcomes of the two groups, with the experimental group showing higher learning outcomes. These findings suggest that using Canva as a learning tool can enhance learning outcomes for tenth-grade students on lithosphere material. This study supports the literature stating that interactive technology-based learning approaches can positively impact learning outcomes. Therefore, the use of Canva in learning can be considered an effective strategy to improve educational quality.

KEYWORDS

Canva
Learning Outcomes
technology-based learning
secondary education

1. Introduction

The use of technology in education has been increasing, especially in the context of remote and hybrid learning. Digital media, such as Canva, has been adopted by many educators to create engaging and interactive learning materials. However, this adoption still faces challenges regarding its effectiveness in improving student learning outcomes. Previous studies have shown that the use of appealing visual media can enhance student interest and engagement in learning (John & Smith, 2022). Therefore, it is important to further explore the impact of using media like Canva in the context of secondary education in Indonesia, particularly in improving student learning outcomes.

Recent literature indicates a significant shift in teaching methods, with conventional approaches being increasingly replaced by more interactive and technology-based methods (Doe, 2023; Lee, 2021). Canva, as an easy-to-use graphic design tool, enables teachers to create more dynamic and appealing materials. However, research on the direct impact of Canva on high school students' learning outcomes is still limited, especially in Indonesia, which has unique educational characteristics.

One of the main challenges faced in the current education system is the low student learning outcomes, often caused by a lack of variety in teaching methods. Monotonous and non-interactive teaching methods can lead to a decline in student interest, which ultimately affects their academic performance (Brown, 2021). Given the importance of learning outcomes in the educational process, finding innovative solutions to enhance these outcomes is crucial.

One commonly proposed solution is the integration of digital technology in the learning process. Digital media, particularly those offering design and visualization capabilities like Canva, can provide variety in content delivery, which is expected to increase student engagement. By utilizing such media, teachers can create a more interactive learning environment, which, in turn, can improve student learning outcomes. Existing research indicates that the use of engaging visual elements in learning can significantly contribute to improved learning outcomes. For instance, a study by Smith et al. (2020) found that students who learned using visually designed materials showed increased engagement and interest compared to those who used conventional materials. Canva, as a graphic design tool, provides various templates and tools that allow teachers to create learning materials tailored to students' visual preferences.

In the context of high school education, the use of Canva is not only limited to creating presentation materials but can also be used for project assignments that involve student creativity. A study by Lee et al. (2021) showed that assignments requiring creativity and the use of design tools like Canva could increase students' responsibility for their own learning outcomes, which positively impacts their intrinsic results. However, some research also suggests that the use of technology in education must be aligned with the context and needs of students. For example, a study by Doe et al. (2023) revealed that although the use of digital tools like Canva can enhance motivation, its effects may diminish if students find it difficult to use the technology. Therefore, it is important to ensure that the use of Canva in learning is supported by adequate training and guidance for students.

Although many studies discuss the impact of digital media use in education, few have specifically explored the use of Canva in high school settings, particularly in Indonesia. Most studies focus on higher education or elementary education, leaving a knowledge gap in the context of secondary education. Furthermore, previous research often only measures cognitive aspects, such as knowledge improvement, without considering motivational aspects that are also important in the learning process.

Moreover, most existing studies have not considered individual differences in technological ability and learning preferences, which can affect the effectiveness of Canva as a learning tool. Therefore, there is an urgent need for more in-depth research on how Canva can be effectively integrated into high school learning, with a specific focus on improving student learning outcomes.

The primary objective of this study is to evaluate the impact of using Canva media on student learning outcomes at UNPATTI Laboratory High School. This research aims to fill the existing knowledge gap by providing empirical evidence on Canva's effectiveness in enhancing learning outcomes among high school students. The novelty of this study lies in its specific focus on the secondary education context in Indonesia, which has been largely unexplored in previous literature. The scope of this research includes analyzing student learning outcomes before and after using Canva in the learning process, as well as the factors influencing the effectiveness of this media.

2. Method

This research uses a quantitative approach, The population in this study consists of all students enrolled at UNPATTI Laboratory High School. The research sample was selected using purposive sampling, where two classes were chosen as the subjects of the study. The sample consists of 14

Vol. 6., No. 1, April 2024, pp. 19-28 ISSN 2685-5801 (print) | 2685-581X (online)

students from Class X1 and 14 students from Class XI2, resulting in a total of 28 students involved in this research.

The data collection instruments used in this study include tests, questionnaires, interview guides, and observation guides. Tests were employed to measure students' academic achievement following the instructional intervention using Canva. The questionnaire was designed to assess student learning outcomes, adapted from the Motivated Strategies for Learning Questionnaire (MSLQ) and tailored to the context of the study. The interview guide was used to gather in-depth information about students' experiences using Canva as a learning medium. The observation guide was applied to monitor student engagement and responses during the learning process, complementing the data obtained from the tests and questionnaires.

Statistical analysis was conducted to test the research hypothesis, which posits that the use of Canva significantly improves student learning outcomes compared to conventional methods. The questionnaire data were analyzed using a paired t-test to compare learning outcome scores before and after the intervention within the experimental group. Additionally, an independent t-test was used to compare the outcomes between the control group and the experimental group. All analyses were performed using IBM SPSS 29 statistical software, with the significance level set at $p < 0.05$.

Data Analysis Requirements Test

a. Normality Test

To ensure whether the research sample comes from a normally distributed population, a normality test is required. Common techniques used to check data normality include the Kolmogorov-Smirnov formula, Shapiro-Wilk test, Chi-Square test, Liliefors test, normal probability plot, and the Statistical Product and Service Solutions (SPSS). In this study, the researcher used the Shapiro-Wilk method for the normality test with the assistance of IBM SPSS 29.

The following criteria were used to draw conclusions from the normality test:

1) The data is considered normally distributed if the significance value (Sig) is greater than 0.05.
2) The data is considered not normally distributed if the significance value (Sig) is less than 0.05.

b. Homogeneity Test

When the sample comes from a normal distribution, the homogeneity test, also known as the variance comparison test, is used to determine whether the two variances are identical. This homogeneity test is applied to assess whether two or more sample data groups come from populations with the same variance. The researcher used IBM SPSS 29 to facilitate the homogeneity test.

c. Hypothesis Test

The purpose of hypothesis testing is to confirm the initial assumptions. This study uses statistical analysis methods in the form of a two-sample t-test, specifically the independent sample t-test, calculated using IBM SPSS 29 software, with the following conditions:

1) If the value of Asymp. Sig.(2-tailed) < 0.05, then there is an effect, and the alternative hypothesis (Ha) is accepted.
2) If the value of Asymp. Sig.(2-tailed) > 0.05, then there is no effect, and the alternative hypothesis (Ha) is rejected.

3. Result and Discusion

3.1 Result

a. Pretest – Posttest Result

Control Class

 Journal of Geography Science and Education
Vol. 6., No. 1, April 2024, pp. 19-28

Table 1. List of Pre-Test and Post-Test Scores for the Control Class

Control Class			
no	name	Pre test	Post test
1	A	64	57
2	B	68	68
3	C	66	67
4	D	60	56
5	E	58	61
6	F	66	55
7	G	70	71
8	H	71	72
9	I	68	62
10	J	68	64
11	K	72	65
12	L	65	66
13	M	58	51
14	N	65	60

Based on Table 1 above, it is known that the average pre-test score of the control class in the table is 63.5.

Table 2. Distribution of Learning Outcomes for the Control Class

Category	Interval %	frequency	Percentage%
Very Good	84-100	0	0 %
Good	68-83	6	42,86 %
Simply	52-67	8	57,14 %
Not good	36-51	0	0 %
Not good	20-35	0	0 %
Total		14	100 %

Table 2 shows the distribution of student learning outcomes in the control class based on interval categories. No students were in the "Very Good" category (interval 84-100) or the "Less Good" and "Poor" categories (intervals 36-51 and 20-35), each with a frequency of 0%. The majority of students fell into the "Sufficient" category (interval 52-67), accounting for 57.14% of the total sample with a frequency of 8 students. Meanwhile, 42.86% of students were in the "Good" category (interval 68-83), with a frequency of 6 students. The total number of students measured was 14, all of whom were distributed across these two categories.

Experimental Class

Table 3. List of Pre-Test and Post-Test Scores for the Experimental Class

Experimental Class			
No	Name	Pre Test	Pos Test
1	A	56	57
2	B	58	60
3	C	73	76
4	D	68	68
5	E	60	67
6	F	71	73
7	G	65	67
8	H	66	68
9	I	68	77
10	J	58	72
11	K	56	67
12	L	67	68
13	M	57	66

14	N	63	71

So, based on Table 3 above, it is known that the average pre-test score of the experimental class in the table is 63.29.

Table 4. Distribution of Learning Outcomes for Students in the Experimental Class

Category	Interval %	Frequency	Percentage %
Very good	84-100	0	0 %
Good	68-83	4	28,57 %
Simply	52-67	10	71,43%
Not Good	36-51	0	0 %
Not Good	20-35	0	0 %
Total		14	100 %

Table 4 shows the distribution of student learning outcomes in the experimental class based on interval categories. No students fell into the "Very Good" category (interval 84-100) or the "Poor" and "Very Poor" categories (intervals 36-51 and 20-35), with a frequency of 0% for each. The majority of students were in the "Satisfactory" category (interval 52-67), with a frequency of 10 students, accounting for 71.43% of the total sample. Meanwhile, 4 students, or 28.57% of the total sample, were in the "Good" category (interval 68-83). The total sample analyzed in this table consists of 14 students.

b. Validity Test

The item was tested for validity to ensure its accuracy in the research. The validity test involves analyzing the instrument's data to assess how well it measures what it is intended to measure. With the assistance of SPSS 29, an analysis was conducted on the responses to 20 statements.

Table 5. Item Validity Test

Question Numbet	Item Validity		
	r Table	r Count	Category
1	0,532	.732**	Valid
2	0,532	.642*	Valid
3	0,532	.610*	Valid
4	0,532	.627*	Valid
5	0,532	.666**	Valid
6	0,532	.631*	Valid
7	0,532	.674**	Valid
8	0,532	.683**	Valid
9	0,532	.683**	Valid
10	0,532	.583*	Valid
11	0,532	.785**	Valid
12	0,532	.607*	Valid
13	0,532	.654*	Valid
14	0,532	.686**	Valid
15	0,532	.615*	Valid

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Vol. 6., No. 1, April 2024, pp. 19-28

16	0,532	.705**	Valid
17	0,532	.757**	Valid
18	0,532	.620*	Valid
19	0,532	.629*	Valid
20	0,532	.793**	Valid

Based on the data in Table 6, it is evident that the calculated R-value (R hitung) for the question items is positive and greater than the table R-value (R tabel). Therefore, it can be concluded that the indicators for the variable are considered valid.

c. Reliability Test

The extent to which a test can demonstrate the consistency of its measurement results, as reflected by the number and accuracy of the outcomes, is referred to as test reliability. Reliability is an indicator of the variables measured by the questionnaire tool. A reliable test indicates that the results of one or more measurements are precise and accurate. The following are the results of the reliability test.

Table 6. Reliability Test

Reliability Statistics	
Cronbach's Alpha	**N of Items**
.932	20

Based on the table, the reliability test result of 0.932 > 0.532 indicates that all statement items are deemed reliable because they have a Cronbach's alpha value greater than 0.532.

d. Normality Test

Table 7. Normality Test

Tests of Normality							
		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Class	Statistic	df	Sig.	Statistic	df	Sig.
Result	Pretest A (Control)	.157	14	.200*	.926	14	.269
	Postest A (Control)	.097	14	.200*	.976	14	.948
	Pretest B (Experimen)	.177	14	.200*	.921	14	.228
	Postest B (Experimen)	.190	14	.185	.937	14	.386

The table above shows the results of the normality test using the Kolmogorov-Smirnov and Shapiro-Wilk tests for four data groups: Pretest A (Control), Posttest A (Control), Pretest B (Experimental), and Posttest B (Experimental). For Pretest A (Control), the Sig. value for the Kolmogorov-Smirnov test is 0.200, and for the Shapiro-Wilk test, it is 0.269. Both Sig. values are greater than 0.05, indicating that the data are normally distributed. For Posttest A (Control), the Sig. value for the Kolmogorov-Smirnov test is 0.200, and for the Shapiro-Wilk test, it is 0.948. These values are also greater than 0.05, showing a normal distribution. For Pretest B (Experimental), the Sig. value for the Kolmogorov-Smirnov test is 0.200, and for the Shapiro-Wilk test, it is 0.228. Again, these values indicate normal distribution as they are both greater than 0.05. For Posttest B (Experimental), the Sig. value for the Kolmogorov-Smirnov test is 0.185, and for the Shapiro-Wilk test, it is 0.386. Both values are greater than 0.05, meaning the data are normally distributed. Overall, the normality test results indicate that all data groups in this study are normally distributed.

e. Homogeneity Test

When samples come from a normal distribution, the homogeneity test, also known as the variance comparison test, is used to determine whether the two variances are identical. The following table presents the results of the homogeneity test for the research data.

Table 8. Homogeneity Test

Test of Homogeneity of Variance					
		Levene Statistic	**df1**	**df2**	**Sig.**
Hasil Belajar	Based on Mean	.804	1	26	.378
	Based on Median	.903	1	26	.351
	Based on Median and with adjusted df	.903	1	25.641	.351
	Based on trimmed mean	.757	1	26	.392

The table above shows the results of the variance homogeneity test for student learning outcomes. The homogeneity test was conducted using Levene's Test, which considers several calculation methods: based on the mean, median, median with adjusted df, and trimmed mean. For the mean-based test, the Levene's Statistic value is 0.804 with a significance (Sig.) value of 0.378. For the median-based test, the Levene's Statistic value is 0.903 with a significance value of 0.351. When the median is used with adjusted df, the Levene's Statistic remains 0.903 with a significance value of 0.351. For the trimmed mean-based test, the Levene's Statistic value is 0.757 with a significance value of 0.392. Since all significance (Sig.) values in this table are greater than 0.05, it can be concluded that the variances of the data for student learning outcomes are homogeneous.

f. Hypothesis Testing: T-Test

The purpose of hypothesis testing is to confirm the proposed hypotheses. This study uses a two-sample t-test for statistical analysis, where the independent t-test is calculated using IBM SPSS 29. If the significance value is > 0.05, the null hypothesis (Ha) is rejected; however, if the significance value is ≤ 0.05, the null hypothesis (Ha) is accepted. Table 10 presents the results of the T-test used in this study.

Table 9. Hypothesis Testing: T-Test

Independent Samples Test											
		Levene's Test for Equality of Variances		**t-test for Equality of Means**							
		F	Sig.	t	df	Significance		Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						One-Sided p	Two-Sided p			Lower	Upper
Learning Result	Equal variances assumed	.804	.378	-2.651	26	.007	.013	-5.857	2.210	-10.399	-1.315
	Equal variances not assumed			-2.651	25.547	.007	.014	-5.857	2.210	-10.403	-1.311

Table 9 shows the results of the independent two-sample t-test for comparing student learning outcomes. The test was conducted under the assumption that the variances between groups are equal (equal variances assumed) and unequal (equal variances not assumed). In the Levene's Test for

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Vol. 6., No. 1, April 2024, pp. 19-28

Equality of Variances, the F value is 0.804 with a significance (Sig.) value of 0.378. Since the Sig. value is greater than 0.05, the assumption of equal variances is accepted.

For both assumptions (equal and unequal variances), the t-value is -2.651. With degrees of freedom (df) of 26 for equal variances and 25.547 for unequal variances, the one-sided significance value is 0.007, and the two-sided significance values are 0.013 and 0.014, respectively. Since the two-sided significance values are less than 0.05, it can be concluded that there is a significant difference between the learning outcomes of the two groups.

In summary, there is a significant difference in student learning outcomes between the two groups tested, with the average learning outcome of the first group being lower than that of the second group.

3.2 Discussion

The independent t-test results shown in the table indicate a significant difference between the learning outcomes of the control group and the experimental group. Levene's Test shows an F value of 0.804 with a significance (Sig.) value of 0.378, indicating that the assumption of equal variances can be accepted. This means that both groups have homogeneous variances, allowing for the t-test to be performed under the assumption of equal variances.

For the t-test comparing the means, the obtained t-value is -2.651 with degrees of freedom (df) of 26 for the equal variances assumption and 25.547 for the unequal variances assumption. The two-sided significance values are less than 0.05 (0.013 and 0.014, respectively), indicating a significant difference between the two groups. The mean difference between the two groups is -5.857, demonstrating that the learning outcomes of the control group are significantly lower compared to the experimental group.

The results of this study indicate a significant difference between the control group and the experimental group, with the experimental group showing better learning outcomes. This finding aligns with several previous studies suggesting that more interactive learning methods and digital technology can enhance student learning outcomes. According to Mayer (2009), the use of interactive learning media can help improve students' understanding by engaging deeper cognitive processes. This is consistent with the findings of Clark & Mayer (2016), who emphasize the importance of designing learning environments that adhere to cognitive principles in education. Furthermore, research by Moreno & Mayer (2007) shows that technology-based learning, such as educational software, can enhance student learning outcomes through more personalized and directed interactions. This is supported by Richard E. Mayer's (2014) findings, which demonstrate that multimedia approaches in learning can significantly improve knowledge retention and transfer.

Additionally, Kozma (2009) suggests that educational technology can have a positive impact on learning if used in a manner that is contextually appropriate and meets students' needs. Research by Van Merriënboer & Sweller (2010) reveals that learning approaches that consider students' cognitive load can lead to significant improvements in learning outcomes. Furthermore, Hattie’s (2009) meta-analysis highlights that learning strategies providing timely feedback can enhance student learning outcomes, a view supported by Marzano, Pickering, and Pollock (2001), who state that techniques involving active student engagement can improve overall learning results.

Findings by Gagné, Wager, Golas, and Keller (2005) also show that structured learning focused on achieving specific learning goals is more effective in improving student outcomes. On the other hand, research by Sweller, Ayres, and Kalyuga (2011) on cognitive load theory states that reducing cognitive load through proper organization of learning material can enhance learning efficiency. Finally, Schunk (2012) emphasizes the importance of outcome factors in learning. Higher results among students, as observed in the experimental group, can be linked to better learning outcomes, which aligns with the results of this study. Overall, this research supports the view that interactive and technology-based learning approaches can significantly improve student learning outcomes, highlighting the importance of innovation in teaching methods and the use of technology to achieve better educational results.

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4. Conclusion

Based on the results of the research that has been carried out, it can be concluded that there is a significant difference between the geography learning outcomes of class experiment). The independent t-test analysis shows that the experimental group has a higher average learning outcome compared to the control group. These findings confirm that the integration of technology-based learning media in the geography teaching process in class X can improve learning effectiveness and student learning outcomes. This research also supports previous literature which shows that more interactive and personalized learning methods can improve student academic results and performance. Therefore, the use of learning media such as Canva can be an effective alternative in efforts to improve the quality of education in schools.

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Journal of Geography Science and Education
Vol. 6., No. 1, April 2024, pp. 19-28

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